



Air Quality Permitting Statement of Basis

March 10, 2005

**Tier II Operating Permit and Permit to Construct
No. T2-040121**

**Merritt Brothers Lumber Co., Athol
Facility ID No. 055-00039**

Prepared by:

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AIR QUALITY DIVISION*

FINAL

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Acronyms, Units, and Chemical Nomenclatures

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
HAPs	hazardous air pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/day	pounds per day
lb/hr	pounds per hour
Mbdft	1,000 board feet
MMbdft	million board feet
MMbdft/yr	million board feet per year
MMBtu/hr	million British thermal unit per hour
MBL	Merritt Brothers Lumber Co.
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standard
NESHAP	Nation Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
SIP	State Implementation Plan
SM	synthetic minor
SO ₂	sulfur dioxide
T-RACT	Toxic Reasonably Achievable Control Technology
TAPs	toxic air pollutants
T/yr	tons per year
µg/m ³	micrograms per cubic meter
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01 Sections 201 and 404.04, *Rules for the Control of Air Pollution in Idaho (Rules)* for permits to construct and Tier II operating permits, respectively.

2. FACILITY DESCRIPTION

Merritt Brothers Lumber Co. (MBL) owns and operates a planer mill and finger-jointing facility. The Process Flow Diagram can be found in Section 2 of the application.

Green and dry lumber is delivered to the facility. Green lumber is dried in one of five dry kilns and dry lumber is finished in the planer mill and/or finger-jointing mill. Planing produces shavings and a small amount of dry chips. A hammer hog in the planer mill building is used to break up larger wood scraps. The planer shavings, chips, and hogged wood are transported pneumatically to planer mill cyclone No. 4, located on the truck bin. A baghouse connected in series controls PM₁₀ emissions from cyclone No. 4. Shavings are loaded into trucks from the bottom of the shavings bin for transport offsite.

Loading planer chips and shavings into trucks from the bin is a source of fugitive particulate emissions; however, the area under the shavings bins is enclosed to control dust. The cyclones are point sources of particulate emissions. Particulate emissions from cyclone No. 4 are controlled by a baghouse. For purposes of permitting, the baghouse is the emissions discharge point.

Cut ends are delivered to the facility from various off-site sources for finger-jointing. Random board pieces are cut and joined to produce a saleable product. Chips and sawdust for the finger-jointing process are transported pneumatically to two cyclones on separate truck bins. The material is loaded into trucks from the bottom of the bins for transport offsite. Truck traffic into and out of the finger-jointer facility produces fugitive particulate emissions.

Loading of finger-jointer chips and sawdust into trucks also creates fugitive particulate emissions. The two finger-jointer cyclones are point sources of particulate emissions. Finished product from all the operations at the facility is packaged and shipped from the facility by truck or rail.

Exhaust from the dry kilns is routed to heat exchangers and exhausts through the five heat exchanger stacks, which are point sources. Emissions from the dry kilns include particulate matter, VOC and three toxic air pollutants (formaldehyde, methanol and phenol). The dry kilns are heated using non-contact steam coils, with the steam being supplied by two natural gas boilers. The natural gas boilers are point sources of PM₁₀, NO_x, SO₂, CO and VOCs. Natural gas combustion also produces trace emissions of a number of toxic air pollutants.

3. FACILITY / AREA CLASSIFICATION

The facility is not a major facility as defined in IDAPA 58.01.01.205 or 008.10. It is not a designated facility as defined in IDAPA 58.01.01.006.27. The Standard Industrial Classification defining the facility is 2421. The facility classification is SM80 (synthetic minor facility with emissions of a regulated pollutant above 80% of the major source threshold) because without operational limits the facility's potential to emit may exceed Tier I operating permit major source thresholds.

Merritt Brothers Lumber Co. is located in Athol, Idaho, which is located in Kootenai County. Kootenai County is located in AQCR 62 and UTM zone 11. This area is classified attainment or unclassifiable for all state and federal criteria air pollutants.

The AIRS information provided in Appendix B defines the classification for each regulated air pollutant at MBL. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

MBL has submitted a permit application to add a fifth dry kiln to its facility and increase the facility's total dry lumber throughput to 170 MMbdf/yr, an increase of 40 MMbdf/yr. MBL has requested that its existing permit, PTC No. P-040106, issued September 13, 2004, be modified to allow for the new source, and the production and emissions increase.

MBL has also requested that DEQ remove some existing process equipment that is no longer in use but is permitted. Non-emissions related revisions include the removal of obsolete cyclones and a target box from the permit. The cyclones and the target box are no longer connected to active process equipment.

4.1 Application Chronology

September 28, 2004	DEQ received a 15-day pre-permit construction approval application from MBL for the addition of a fifth kiln.
October 13, 2004	DEQ issued 15-day pre-permit construction application.
October 27, 2004	DEQ declared the application complete.
December 17, 2004	DEQ received revised modeling file and T-RACT analysis for formaldehyde emissions from the dry kilns and the process data on finger-jointer cyclones from Lorenzen Engineering, MBL's consultant, through email.
December 17, 2004	DEQ received information regarding finger-jointer mill maximum capacity from Lorenzen Engineering, MBL's consultant, through email.
December 23, 2004	Draft permit and statement of basis provided to DEQs Coeur d'Alene RO.
February 4, 2005	DEQ received comments from MBL on proposed permit during public comment period.
February 21, 2005	DEQ received a spreadsheet on annual VOC emissions monitoring from Lorenzen Engineering, MBL's consultant, through email.

5. PERMIT ANALYSIS

This section describes the technical and regulatory reviews conducted for this permitting action.

5.1 Equipment Listing

Dry Kilns

Five dry kilns with an allowable throughput of 170 MMbdf/yr.

Cyclones and the Target Box Removed from the Permit

As requested in the application, the following emissions units are not included in the permit analysis and are removed from the permit because they are no longer connected to active process equipment.

- Cyclone No. 1 – Old planer cyclone with flow rate of 20,500 acfm.
- Cyclone No. 2 – Rip saw relay cyclone with flow rate of 18,250 acfm.
- Cyclone No. 3 – Rip saw cyclone with flow rate of 20,500 acfm.
- Cyclone No. 7 – Remanufacturing chips cyclone with flow rate of 18,250 acfm.
- Chip bin target box with throughput of 1.31 bone-dry ton per hour.

5.2 Emission Estimates

Emissions estimates were provided by MBL's consultant, Lorenzen Engineering, Inc. They were included in the pre-permit construction application received by DEQ on September 28, 2004. On February 21, 2005, DEQ received additional information on emissions estimates from MBL's consultant through email. DEQ reproduced the emissions estimates using applicant's information and methodology because some minor mistakes were found in the submittals, and because of the changes requested by MBL during the public comment period. DEQ discussed mistakes with MBL's consultant, and the mistakes were corrected. Details on point source emissions estimates can be found in Appendix C of the statement of basis.

Table 5.2.1 provides a summary of the criteria air pollutants of the facility based on facility's potential to emit (PTE). Table 5.2.2 provides a summary of toxic air pollutants (TAPs) of the facility based on facility's PTE.

Table 5.2.1 SUMMARY OF EMISSIONS INVENTORY

Merritt Brothers Lumber Co. Inc., Athol										
Potential Emissions* – Hourly (lb/hr), and Annual (T/yr)										
Point Source Description	PM₁₀		NO_x		CO		VOC		SO₂	
	Lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Lumber Drying										
Drying Kilns	3.78	9.35	NA	NA	NA	NA	53.97	96.46	NA	NA
Planer Point Sources										
New Planer Cyclone, No.4	1.66	7.24	NA	NA	NA	NA	NA	NA	NA	NA
Finger-Jointer Point Sources										
Finger Jointer Cyclone, No.5	0.525	2.30	NA	NA	NA	NA	NA	NA	NA	NA
Finger Jointer Cyclone (pull-through), No.6	0.525	2.30	NA	NA	NA	NA	NA	NA	NA	NA
Natural Gas Fired Boiler										
Boiler No.1	0.22	0.96	2.87	12.58	2.41	10.57	0.16	0.69	0.02	0.08
Boiler No.2	0.11	0.48	1.44	6.29	1.21	5.28	0.08	0.35	0.01	0.04
Total Emissions From Point Sources		22.63		18.87		15.85		97.50		0.12

* As determined by a pollutant-specific EPA reference method, DEQ-approved alternative, or as determined by DEQ's emissions estimation methods used in this permit analysis.

Note, the facility's potential to emit VOCs is 97.50 T/yr, which is greater than 80%, but less than 100%, of the Tier I major source threshold. Consequently, the facility is classified as an SM80 facility for the purposes of the Tier I operating permit program.

Table 5.2.2 FACILITY TAPS (IDAPA 58.01.01.585 AND 586) EMISSION INVENTORY BASED ON PTE ^a

Pollutants	Natural Gas-Fired Boiler No.1		Natural Gas-Fired Boiler No.2		Dry Kilns	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Benzene	6.03 E-05	2.64E-04	3.02 E-05	1.32E-04		
Benzo(a)pyrene	3.45 E-08	1.51E-07	1.72 E-08	7.55E-08		
Formaldehyde	2.15 E-03	9.44E-03	1.08 E-03	4.72E-03	0.08 ^b	0.34
Hexane	5.17 E-02	2.26E-01	2.59 E-02	1.13E-01		
Naphthalene	1.75 E-05	7.67E-05	8.76 E-06	3.84E-05		
Pentane	7.47 E-02	3.27E-01	3.73 E-02	1.64E-01		
Toluene	9.77 E-05	4.28E-04	4.88 E-05	2.14E-04		
Arsenic	5.75 E-06	2.52E-05	2.87 E-06	1.26E-05		
Barium	1.26 E-04	5.54E-04	6.32 E-05	2.77E-04		
Beryllium	3.45 E-07	1.51E-06	1.72 E-07	7.55E-07		
Cadmium	3.16 E-05	1.38E-04	1.58 E-05	6.92E-05		
Chromium	4.02 E-05	1.76E-04	2.01 E-05	8.81E-05		
Cobalt	2.41 E-06	1.06E-05	1.21 E-06	5.28E-06		
Copper	2.44 E-05	1.07E-04	1.22 E-05	5.35E-05		
Manganese	1.09 E-05	4.78E-05	5.46 E-06	2.39E-05		
Mercury	7.47 E-06	3.27E-05	3.73 E-06	1.64E-05		
Molybdenum	3.16 E-05	1.38E-04	1.58 E-05	6.92E-05		
Nickel	6.03 E-05	2.64E-04	3.02 E-05	1.32E-04		
Selenium	6.89 E-07	3.02E-06	3.45 E-07	1.51E-06		
Vanadium ⁴	1.18E-04	5.17E-04	5.90E-05	2.58E-04		
Zinc	8.33 E-04	3.65E-03	4.17 E-04	1.82E-03		
Methanol					2.06 ^c	5.1
Phenol					0.14 ^c	0.34

^aAs determined by a pollutant-specific EPA reference method, a DEQ-approved alternative, or as determined by DEQ's emissions estimation methods used in this permit analysis.

^b Annual average.

^c 24-hr average

5.3 Modeling

Criteria pollutant

The facility has demonstrated compliance, to DEQ's satisfaction, that this project will not cause or significantly contribute to a violation of PM₁₀ ambient air quality standards. The summary of the modeling analysis is in Table 5.3.1 Detailed modeling analysis is included in Appendix A.

Table 5.3.1 FULL IMPACT ANALYSIS RESULTS

Pollutant	Averaging Period	Facility Ambient Impact (µg/m ³)	Background concentration (µg/m ³)	Total Ambient Concentration (µg/m ³)	NAAQS (µg/m ³)	Percent of NAAQS
PM ₁₀	24-hour	54.7	66	120.7	150	80
	Annual	10.27	21	31.27	50	62

Toxic air pollutant

Because formaldehyde emissions from the fifth dry kiln exceeded the corresponding screening emissions level in IDAPA 58.01.01.586 and the modeled concentration exceeds the corresponding acceptable ambient concentrations in IDAPA 58.01.01.586, a T-RACT analysis was required and subsequently conducted by MBL's consultant. The analysis was submitted to DEQ on December 17, 2004. DEQ reviewed the submittal and determined that the T-RACT analysis satisfied the requirement under IDAPA 58.01.01.210. Therefore, this modification complies with preconstruction toxic rules.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this permit.

IDAPA 58.01.01.201..... Permit to Construct Required

This facility is proposing to add a fifth dry kiln and increase the drying capacity of the facility by 40 MMbdf/yr. The proposed project does not qualify for an exemption under Sections 220 through 223 of the Rules; therefore, a PTC is required.

40 CFR 60 Subpart Dc New Source Performance Standards

The kiln is not subject to NSPS requirements.

40 CFR 61 and 63..... National Emission Standards for Hazardous Air Pollutants & MACT

The kiln is not subject to NESHAP or MACT requirements.

5.5 Fees

MBL paid the \$1,000 application fee, as required in IDAPA 58.01.01.224, and \$5,000 permit to construct processing fee, as required in accordance with IDAPA 58.01.01.225, on September 28, 2004. The increase in emissions from the modification is greater than 10 T/yr and less than 100 T/yr.

The MBL facility is not a major facility as defined in IDAPA 58.01.01.008.10. Therefore, in accordance with IDAPA 58.01.01.387, Tier I operating permit registration fees are not applicable.

Table 5.1 PTC PROCESSING FEE TABLE

Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	0	0.0
SO ₂	0.0	0	0.0
CO	0.0	0	0.0
PM ₁₀	1.7	0	0.0
VOC	36.3	0	0.0
TAPS/HAPS	1.4	0	0.0
Total:	39.4	0	39.4
Fee Due	\$5,000		

5.6 Regional Review of Draft Permit

The draft permit and statement of basis was sent to DEQ Coeur d'Alene Regional Office on December 23, 2004. The comments from Coeur d'Alene Regional Office for review were addressed in this statement of basis.

5.7 Facility Review of Draft Permit

No facility review was provided. The facility submitted their comments during public comments period. The details how the comments are addressed can be found in Appendix D of this statement of basis.

6. PERMIT REQUIREMENTS

This section only addresses new or modified permit conditions due to this permitting action.

Drying Kilns

- 6.1 Permit Condition 4.4 allows for a 40 MMbdf/yr increase in dried lumber from five dry kilns. The allowable dried lumber throughput is 170 MMbdf/yr.

6.2 Emissions Limits

6.2.1 PM₁₀ Emissions Limit

The daily PM₁₀ emissions limit is included in the permit because its predicted impact determined through ambient air quality modeling is 80% of the PM₁₀, 24-hour NAAQS. Because the predicted ambient impact is close to a standard, the emissions limit is included as a reasonable permit condition. Annual PM₁₀ emissions are estimated to be 9.35 T/yr from the kilns at the allowable throughput. This estimate is approximately 10% of the Tier I operating permit major source threshold. Annual PM₁₀ emissions are not specifically limited in the permit because VOCs are emitted in a greater quantity and establish the facility's potential to emit. Annual PM₁₀ emissions are inherently limited below any regulatory trigger by the dry lumber throughput limit; therefore, an annual PM₁₀ emissions limit is not required.

6.2.2 VOC Emissions Limit

VOC emissions from the facility are emitted in the greatest quantity, and thus, establish the facility's potential to emit. MBL has requested that DEQ impose an annual VOC limit of 97.5 T/yr in order to retain minor status with respect to the Tier I operating permit program. Compliance with this limit is demonstrated by requiring the facility's boilers to be fueled on natural gas exclusively, and by requiring the facility to monitor and record its dry lumber throughput to show that the dry lumber throughput limit is not exceeded. These conditions are enforceable requirements in the modified permit.

Cyclones and Planer Cyclone Baghouse

- 6.3 As requested in the application, the following emissions units are not included in the permit analysis and are removed from the permit because they are no longer connected to active process equipment.

- Cyclone No. 1 – Old planer cyclone with flow rate of 20,500 actual cubic feet per minute (acfm).
- Cyclone No. 2 – Rip saw relay cyclone with flow rate of 18,250 acfm.
- Cyclone No. 3 – Rip saw cyclone with flow rate of 20,500 acfm.
- Cyclone No. 7 – Remanufacturing chips cyclone with flow rate of 18,250 acfm.
- Chip bin target box with throughput of 1.31 bone-dry tons per hour. Per the application.

As a result, the emissions are redistributed to the other two cyclones.

6.4 Emissions Limits

Daily emissions limit for PM₁₀ is revised to reflect the removal of the sources listed above.

Annual PM₁₀ and PM emissions limits are removed from the permit because they are inherently limited by the daily emissions limits. The facility wide PM₁₀ emissions are 22.6 T/yr which are well below major threshold of 100 T/yr. The facility wide PM₁₀ modeled ambient concentration plus background concentration for PM₁₀, annual average is 21% of the NAAQS.

Natural Gas-fired Boiler

6.5 Emissions Limits

Emissions limits for NO_x and CO are removed from the permit because they are inherently limited by the PM₁₀ emissions limits for the boilers. The facility wide NO_x and CO modeling concentrations plus background concentration are well below their NAAQS.

7. PUBLIC COMMENT

In accordance with IDAPA 58.01.01.404.01.c, a public comment period on the proposed Tier II operating permit and application materials was provided. The public comment period started on January 19, 2005 and ended February 18, 2005. Comments regarding DEQ's proposed action were provided by MBL on February 4, 2005. DEQ's Response to Public Comments can be found in Appendix D of the document.

8. RECOMMENDATION

Based on review of application materials and all applicable state and federal rules and regulations, staff recommends that MBL be issued final Tier II Operating Permit and PTC No. P-040121 for the addition of a fifth dry kiln and a throughput and emissions increase. A public comment period on the proposed permit was provided in accordance with IDAPA 58.01.01.404.01.c. The project does not involve PSD permitting requirements.

BR/SYC/sd Permit No. P-040121

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APPENDIX A

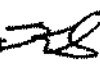

Modeling Review

Tier II Operating Permit and Permit to Construct No. T2-040121

Merritt Brothers Lumber Co., Athol

Facility ID No. 055-00039

MODELING MEMORANDUM

DATE: December 17, 2004
TO: Shawnee Chen, Senior Engineer
THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator 
FROM: Almer Casile, Permitting Analyst 
PROJECT NUMBER: T2-040121
SUBJECT: Modeling Review for the Merritt Brothers Lumber, Athol
Facility ID No. 055-00039

1.0 Summary

Atmospheric dispersion modeling of emissions was submitted in a Tier II/permit to construct application to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02). This modeling analysis included 10 sources and addressed the criteria pollutant PM₁₀ and TAP formaldehyde.

Table 1 presents the key assumptions used in the modeling analysis submitted by the applicant.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSIS SUBMITTED BY THE APPLICANT	
Assumption	Explanation
Cyclones emission rates represent operation for a 24 hour period.	Facility has proposed a 24 hr operating schedule.
Each kiln's 24 hr average emission rate equals 0.756 lb/hr. Total emissions from kilns equals 3.78 lb/hr.	Provides for worst case 24 hr emissions.
Each kiln's annual emission rate equals 9.3 ton/year (hourly emission of 2.13 lb/hr averaged over the year). Total emissions from kilns equals 9.3 ton/yr.	Facility cannot operate at worst case conditions for an entire year.
Facility will implement T-RACT for formaldehyde.	The modeled T-RACT ambient concentration at the point of compliance is less than the amount of formaldehyde that would contribute an ambient air cancer risk probability of less than one to one hundred thousand (1:100,000).

Based on the results of the analysis, DEQ has determined that the submitted modeling analysis demonstrates, to DEQ's satisfaction, that the facility will not cause or contribute to a violation of any ambient air quality standards of TAPs or PM₁₀.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits

This facility is located in Kootenai County which is designated as an attainment or unclassifiable area for sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), lead (Pb), ozone (O₃), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀). The application proposes changes in emissions that exceed modeling thresholds for PM₁₀, and the screening level for formaldehyde. The applicable regulatory limits for the application are presented in Table 2.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Contribution Levels ($\mu\text{g}/\text{m}^3$) ^{a,b}	Regulatory Limit ($\mu\text{g}/\text{m}^3$) ^c	Modeled Value Used ^d
PM ₁₀ ^e	Annual	1	50 ^f	Maximum 1 st highest
	24-hour	5	150 ^g	Highest 2 nd highest
Formaldehyde	Annual	N/A	7.7E-02	Maximum 1 st highest

a. IDAPA 58.01.01.006.93

b. Micrograms per cubic meter

c. IDAPA 58.01.01.577 for criteria pollutants, IDAPA 58.01.01.585 for non-carcinogenic toxic air pollutants IDAPA 58.01.01.586 for carcinogenic toxic air pollutants.

d. The maximum 1st highest modeled value is always used for significant impact analysis and for all toxic air pollutants. Concentration at any modeled receptor.

e. Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

f. Never expected to be exceeded in any calendar year.

g. Never expected to be exceeded more than once in any calendar year (used only when 1 year of meteorological data is available for modeling).

2.2 Background Concentrations

The appropriate background concentrations for this modeling analysis were provided by DEQ in its July 2004 review of the modeling protocol. The concentrations are presented in Table 3.

Table 3. BACKGROUND CONCENTRATIONS.		
Pollutant	Averaging Period	Background concentrations ($\mu\text{g}/\text{m}^3$) ^a
PM ₁₀	24-hour	66
	Annual	21

a. Micrograms per cubic meter.

3.0 Assessment of Submitted, Certified Modeling Analysis

This section documents the assessment of the application materials as submitted and certified by the applicant.

3.1 Modeling Methodology

Lorenzen Engineering, Inc., conducted the modeling analysis. Table 4 presents the modeling assumptions and parameters used by the applicant. Table 4 also includes DEQ's review and determination of those assumptions and parameters.

Table 4. MODELING PARAMETERS.		
Parameter	What Facility Submitted	DEQ's Review/Determination
Modeling protocol	A modeling protocol was submitted for prior approval	The original protocol was not followed. The facility updated the protocol after errors were found in it.
Model Selection	ISC-Prime	This is appropriate and correct version was used.
Meteorological Data	DEQ data from Meyer Ranch April 1, 2000 through March 31, 2001	Appropriate
Model Options	Regulatory defaults used	Appropriate
Land Use	Rural land use	Appropriate
Complex Terrain	Complex terrain is included in the model	Appropriate
Building Downwash	Downwash was included	Appropriate
Receptor Network	25 meters along ambient air boundary 100 meters out to 2000 meters 10 meters along predicted hot spots	This is sufficient to adequately address the maximum design concentration
Facility Layout	Plot Plan	The facility building layout used in the model was verified by using the scaled plot plan submitted by the applicant. Stack and the kiln exhausts locations were verified against updated information submitted by the facility.

3.2 Emission Rates

Table 5 provides the criteria pollutant and TAPs emission rates used in the submitted modeling files, respectively.

Table 5. EMISSION RATES FOR CRITERIA AND TOXIC POLLUTANTS		
Source	Emission Rates (lb/hr)	
	PM ₁₀ (24/Annual)	Formaldehyde
Boiler 1	0.22	0.001
Boiler 2	0.11	0.001
Cyclone 4 w/Baghouse	1.66	N/A
Cyclone 5	0.525	N/A
Cyclone 6	0.525	N/A
Kiln Heat Exchanger 1	0.756/0.425	0.01552
Kiln Heat Exchanger 2	0.756/0.425	0.01552
Kiln Heat Exchanger 3	0.756/0.425	0.01552
Kiln Heat Exchanger 4	0.756/0.425	0.01552
Kiln Heat Exchanger 5	0.756/0.425	0.01552

3.3 Emission Release Parameters

The emission release parameters used in the modeling analysis submitted by the applicant are presented in Table 6.

Table 6. POINT SOURCE EMISSION RELEASE PARAMETERS					
Source	Stack Exhaust Type	Stack Height (m)	Temp. (K)	Exit Velocity (m/s)	Stack Diameter (m)
Boiler 1	Rain Cap	7.62	533.15	0.001	0.9144
Boiler 2	Rain Cap	7.62	533.15	0.001	0.4572
Cyclone 4 w/Baghouse	Horizontal	6.10	293.15	0.001	0.001
Cyclone 5	Horizontal	18.3	293.15	0.001	0.001
Cyclone 6	Horizontal	6.10	293.15	0.001	0.9144
Kiln Heat Exchanger 1	Vertical	9.144	341.48	7.187	0.9144
Kiln Heat Exchanger 2	Vertical	9.144	341.48	7.187	0.9144
Kiln Heat Exchanger 3	Vertical	9.144	341.48	7.187	0.9144
Kiln Heat Exchanger 4	Vertical	9.144	341.48	7.187	0.9144
Kiln Heat Exchanger 5	Vertical	9.144	341.48	7.187	0.9144

a. As per Air Quality Modeling Guideline (rev. 12/31/02), stack's with raincaps shall have exit velocities set to 0.001 m/s.

3.4 Results

This section present the results based on the information submitted as certified by the applicant.

3.4.1 Full Impact Analysis Results

Facility-wide emissions were modeled. The results are included in the following table.

Table 7. FACILITY CONCENTRATIONS FOR CRITERIA POLLUTANTS FOR FULL IMPACT ANALYSIS						
Pollutant	Averaging Period	Facility Ambient Concentration ($\mu\text{g}/\text{m}^3$)	Total Ambient concentration ($\mu\text{g}/\text{m}^3$)	Percent of NAAQS	Receptor Location	
					East (m)	North (m)
PM ₁₀	24-hour	54.7	120.7	80	521591.00	5310213.50
	Annual	10.27	31.27	62	521745.81	5310147.00

3.4.2 Toxic Air Pollutants Results

Facility-wide emissions of formaldehyde were modeled. Results are conservative because total emissions of formaldehyde (which includes the emission increase associated with the proposed permitting action) were modeled. The results are in the following table.

Table 8. TOXIC AIR POLLUTANTS ANALYSIS RESULTS				
Pollutant	Averaging Period	Maximum Concentration ($\mu\text{g}/\text{m}^3$)	Regulatory Limit ($\mu\text{g}/\text{m}^3$)	Percent of Limit
Carcinogens				
Formaldehyde	Annual	0.168	7.7E-02	218%

The ambient concentration is less than the amount of formaldehyde that would contribute an ambient air cancer risk probability of less than one to one hundred thousand (1:100,000). Facility has stated that it will implement T-RACT in accordance with IDAPA 58.01.01.210.12.c.

APPENDIX B

AIRS Information

Tier II Operating Permit and Permit to Construct No. T2-040121

Merritt Brothers Lumber Co., Athol

Facility ID No. 055-00039

Table A.1 AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

AIR PROGRAM	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
POLLUTANT							
SO ₂	B						U
NO _x	B						U
CO	B						U
PM ₁₀	B						U
PT (Particulate)	B						
VOC	SM					SM80	U
THAP (Total HAPs)	B						
			APPLICABLE SUBPART				

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 T/yr threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

APPENDIX C

Emissions Inventory and an Example for VOC Emissions Calculations

Tier II Operating Permit and Permit to Construct No. T2-040121

Merritt Brothers Lumber Co., Athol

Facility ID No. 055-00039

Criteria Air Pollutants

Source Information

Facility: Merritt Brother Lumber Company
Permit No.: T2-040121
Facility ID No.: 051-00039
Emissions Unit: Lumber facility

Kiln Information

Maximum Annual Throughput ¹ :	170,000 (1,000 bdt/yr)
Maximum kiln capacity:	825 (1,000 bdt)

¹ Kiln's capacity provided by the applicant

² provided by the applicant in section 2.1 of the modeling protocol submitted in September 2004.

Criteria Air Pollutants from Drying Kilns

	lb/1,000 bdt	Emissions Factors	Emissions		
			lb/yr ¹	lb/day ²	T/yr ³
PM ₁₀	0.11	ORCAA dry Kiln Factor	3.78	90.72	9.35
VOC			53.94	1294.47	96.46

¹ lb/yr = maximum kiln capacity (1,000 bdt/batch) x EF (lb/1,000 bdt) x 24 hr/batch. 24hr/batch is a reasonable assumption provided by MBL's consultant. For VOC, worst case EF = 1.47 was used to calculate lb/yr VOC emissions.

² lb/day = lb/yr x 24 hr/day.

³ For PM₁₀, T/yr = annual throughput (1,000 bdt/yr) x EF (lb/1,000 bdt) / (2,000 lb/T). For VOC, T/yr varies with the wood species and throughput. MBL's consultant is to develop a spreadsheet to track the VOC emissions every month and to adjust the wood species or throughput as needed to ensure that the 12-month rolling average VOC emissions are less than 97.5 T/yr facility wide. See the spreadsheet and EF's for different wood species in the statement of basis.

Natural Gas-fired Boiler 1 Information¹

Rated heat input rate:	29.29 MMBtu/hr
Operating hours:	8,760 hr/yr

¹ Information from the applicant.

Criteria Air Pollutants from Natural Gas-fired Boiler 1

Pollutant	lb/10 ⁶ scf	Emissions Factors (EFs, AP-42, Rev. 7/98)	lb/MMBtu ((lb/10 ⁶ scf)/1020 (MMBtu/10 ⁶ scf))	Emissions		
				lb/yr ¹	lb/day ²	T/yr ³
PM ₁₀	7.6		0.0075	0.218	5.24	0.96
NO _x	100		0.0980	2.872	68.92	12.58
CO	84		0.0824	2.412	57.89	10.57
SO ₂	0.6		0.0006	0.017	0.41	0.08
VOC	5.5		0.0054	0.158	3.79	0.69
Lead (Pb)	0.0005		0.0000	1.44E-05	3.45E-04	6.29E-05

¹ lb/yr = rated heat input rate (MMBtu/hr) x EF (lb/MMBtu)

² lb/day = lb/yr x 24 hr/day.

³ T/yr = lb/yr x annual operating hour (hr/yr) / (2,000 lb/T)

Natural Gas-fired Boiler 2 Information¹

Rated heat input rate:	14.65 MMBtu/hr
Operating hours:	8,760 hr/yr

¹ Information from the applicant.

Criteria Air Pollutants from Natural Gas-fired Boiler 2

Pollutant	lb/10 ⁶ scf	Emissions Factors (EFs, AP-42, Rev. 7/98)	lb/MMBtu ((lb/10 ⁶ scf)/1020 (MMBtu/10 ⁶ scf))	Emissions		
				lb/yr ¹	lb/day ²	T/yr ³
PM ₁₀ ²	7.6		0.0075	0.109	2.62	0.48
NO _x	100		0.0980	1.436	34.47	6.29
CO	84		0.0824	1.206	28.96	5.20
SO ₂	0.6		0.0006	0.009	0.21	0.04
VOC	5.5		0.0054	0.079	1.90	0.35
Lead (Pb)	0.0005		4.90E-07	7.18E-06	1.72E-04	3.15E-05

¹ lb/yr = rated heat input rate (MMBtu/hr) x EF (lb/MMBtu)

² lb/day = lb/yr x 24 hr/day.

³ T/yr = lb/yr x annual operating hour (hr/yr) / (2,000 lb/T)

PM₁₀ Emissions from Cyclone 4, 5 and 6

Emissions unit	Process Data	EF	Emissions		
			lb/yr	lb/day (4)	T/yr (5)
Cyclone #4 - new planter cyclone with baghouse	45,000 acfm	0.005 gr/scf from app.	1.652 (3)	39.46	7.24
	38,557 acfm (1)				
	24 hr/day				
	8,760 hr/yr				
	293.15 K, stack temp				
	20.0 ft. stack height				
	2.387 ft. stack base elevation				
Cyclone #5 - Finger-jointer cyclone	28 inch of Hg, pressure at stack height (2)	0.25 lb/BDT (dry & green chips)	0.525 (6)	12.60	2.30
	20,500 acfm				
	2.10 BDT finger-jointer chips/hr				
	50.40 BDT finger-jointer chips/day (7)				
	24 hr/day				
	8,760 hr/yr				
	293.15 K, stack temp				
Cyclone #6 - Finger-jointer cyclone	60.0 ft. stack height	0.25 lb/BDT (dry & green chips)	0.525 (6)	12.60	2.30
	2.387 ft. stack base elevation				
	20,500 acfm				
	2.10 BDT finger-jointer chips/hr				
	50.40 BDT finger-jointer chips/day (7)				
	24 hr/day				
	8,760 hr/yr				

(1) Vacfm = Vacfm x (273.15 K standard temp/293.15 K, stack temp) x (P at stack height/P standard). Standard condition: P=29.92 inch Hg column, T=273.15 K.

(2) P at stack height (inch of Hg) = 29.92 inch Hg - 0.10 inch of Hg/100 x (stack base elevation + stack height) (ft) (IDAPA 58.01.01.600, Altitude correction)

(3) lb/yr = acfm x EF (gr/scf air) (60 min/hr) (7000 gr/lb). It is a modeled rate too.

(4) lb/day = lb/yr x daily operating hours (hr/day)

(5) T/yr = lb/yr x annual operating hours (hr/yr)

(6) lb/yr = production rate in BDT/hr x EF (lb/BDT). It is a modeled rate too.

(7) BDT finger-jointer chips/hr x daily operating hour (hr/day). The finger-jointer mill is limited by the jointer. Each cyclone was modeled at 2.1 BDT/hr which is above the mill's physical limit of 1.8 BDT/hr. Therefore, no specific monitoring for the cyclones is needed. See email dated 12/17/04 from MBL's consultant for details.

Toxic Air Pollutants (TAPs)/Hazardous Air Pollutants (HAPs)

Source Information

Facility Name	Merritt Brothers Lumber Company
Permit No.	112-040121
Facility ID No.	1051-00019
Emissions Unit	Lumber Facility

Kiln Information

Annual throughput limit ¹	1,700,000 (1,000 MMBtu/yr)
Maximum kiln capacity ²	825 (1,000 MMBtu/yr)

¹ Kiln's capacity provided by the applicant

² provided by the applicant in section 2.1 of the modeling protocol submitted in September 2008.

TAPs/HAPs from Drying Kiln

EXPOSURE FROM DRYING SOIL										
Pollutant (HAP)	Emissions Factor	Emissions	T/yr(3)	TAP/EL ¹	Are emissions below EL ¹	Modeled concentration (µg/m ³) (4)	AACC (µg/m ³)	Below AACC	need T. RACT analysis?	Below 10 times of AACC
	lb/1,000 bbl.									
Methanol (HAP)	0.122	OSU Dry Kiln VOC Study (worst case EF)	5.19 (24-hr average, TAPX(1))	10.33	1.73E+01	below	NA	NA	NA	NA
Formaldehyde (HAP)	0.004		0.0776 (annual average, TAPX(2))	0.34	1.0E-04	Exceed	0.164	7.7E-02	Exceed	NA
Phenol (HAP)	0.004	ORCAA Dry Kiln Factor	0.14 (24-hr average, TAPX(1))	0.34	1.27E+00	below	NA	NA	NA	NA

(1) lb/yr = Maximum kiln capacity (1,000 MMBtu/yr) x EF (lb/1,000 MMBtu) (24 hr/yr). If there are more than one EF available for the specific pollutant, the worst EF is used in the calculation.

(2) T/yr = annual kiln throughput limit (1,000 MMBtu/yr) x EF (lb/1,000 MMBtu) (24 hr/yr).

(3) T/yr = annual throughput limit (1,000 MMBtu/yr) x EF (lb/1,000 MMBtu) (2,000 hr/yr). If there are more than one EF available for the specific pollutant, the worst EF is used in the calculation.

(4) modeled concentration is estimated in proportion with emissions rates. The previous modeling information at 0.164 ug/m3 impact at 0.0776 lb/yr, was used, e.g., new emissions rate at lb/yr x 0.164 ug/m3 / 0.0776 lb/yr.

Natural Gas-Bred Boiler 1 Information¹

Rated heat input rate:	19.39 MMBtu/hr
Operating hours:	8,760 hr/yr

Information from the applicant.

HAPs/TAPs from Natural Gas-Bred Boiler 1

Case No.	TAPS	Emissions Factors (EFs) ¹		Emissions	
		lb/10 ⁶ Btu	lb/MMBtu	lb/yr	T/yr
71-43-2	Benzene (HAP)	2.1 E-03	2.06 E-06	6.03E-03	2.64E-04
50-32-8	Benzaldehyde ²	1.2 E-06	1.18 E-09	3.43E-08	3.31E-07
50-00-0	Formaldehyde (HAP)	7.5 E-02	7.35 E-05	2.15E-03	9.47E-03
110-34-3	Hexane (HAP)	1.8 E+00	1.78 E-03	3.17E-02	2.26E-01
91-20-3	Naphthalene (HAP)	6.1 E-04	5.98 E-07	1.73E-05	2.67E-05
109-66-0	Phenol	2.6 E+00	2.55 E-03	7.47E-02	3.27E-01
108-88-3	Toluene (HAP)	3.4 E-03	3.33 E-06	9.76E-05	4.38E-06
7440-38-2	Arsenic (HAP)	2.0 E-04	1.96 E-07	3.74E-06	2.33E-05
7440-39-3	Beryllium	4.4 E-03	4.31 E-06	1.26E-04	2.33E-05
7440-41-7	Beryllium (HAP) ³	1.2 E-03	1.18 E-06	3.43E-05	1.61E-06
7440-43-9	Cadmium (HAP)	1.1 E-03	1.08 E-06	3.16E-05	1.39E-06
7440-47-3	Chromium (HAP)	1.4 E-03	1.37 E-06	4.02E-05	1.76E-06
7440-48-4	Cobalt (HAP)	8.4 E-03	8.34 E-06	2.41E-04	1.06E-05
7440-50-8	Copper	8.5 E-04	8.32 E-07	2.44E-05	1.07E-06
7439-96-5	Manganese (HAP)	2.8 E-04	2.73 E-07	1.09E-05	4.78E-06
7439-97-6	Mercury (HAP)	2.6 E-04	2.55 E-07	7.47E-06	3.27E-06
7439-98-7	Molybdenum	1.1 E-03	1.08 E-06	3.16E-05	1.39E-06
7440-01-0	Nickel (HAP)	2.1 E-03	2.06 E-06	6.03E-05	2.64E-06
7782-49-2	Selenium (HAP) ²	2.4 E-03	2.35 E-06	6.89E-05	3.02E-06
7440-62-2	Vanadium ⁴	2.3 E-03	2.25 E-06	1.18E-04	5.17E-06
7440-66-6	Zinc	2.9 E-03	2.84 E-06	8.33E-04	3.63E-05
Total HAP		1.14E-05	1.12 E-08	2.27E-07	1.43E-06

¹ Contribution of Air Pollutant Emissions Factors, AP-42 Section 1.4 Natural Gas Combustion (Rev. 3/98)

² EF in AP-42 is listed as less than (<) the value listed in "Emissions Factors" column.

³ EL value from IDAPA 58.01.01.583 or 584.

⁴ In IDAPA 58.01.01.583, the EL and AACC is for V (7440-42-3) expressed as V2O5 (1314-62-1). This Vanadium emissions rate is converted to V2O5 by: AP-42 emissions factor (lb/MMBtu) x heat input rate.

Natural Gas-Bred Boiler 2 Information¹

Rated heat input rate:	14.65 MMBtu/hr
Operating hours:	8,760 hr/yr

Information from the applicant.

HAPs/TAPs from Natural Gas-Bred Boiler 2

Case No.	TAPS	Emissions Factors (EFs) ¹		Emissions	
		lb/10 ⁶ Btu	lb/MMBtu	lb/yr	T/yr
71-43-2	Benzene (HAP)	2.1 E-03	2.06 E-06	6.03E-03	2.64E-04
50-32-8	Benzaldehyde ²	1.2 E-06	1.18 E-09	3.43E-08	3.31E-07
50-00-0	Formaldehyde (HAP)	7.5 E-02	7.35 E-05	2.15E-03	9.47E-03
110-34-3	Hexane (HAP)	1.8 E+00	1.78 E-03	3.17E-02	2.26E-01
91-20-3	Naphthalene (HAP)	6.1 E-04	5.98 E-07	1.73E-05	2.67E-05
109-66-0	Phenol	2.6 E+00	2.55 E-03	7.47E-02	3.27E-01
108-88-3	Toluene (HAP)	3.4 E-03	3.33 E-06	9.76E-05	4.38E-06
7440-38-2	Arsenic (HAP)	2.0 E-04	1.96 E-07	3.74E-06	2.33E-05
7440-39-3	Beryllium	4.4 E-03	4.31 E-06	1.26E-04	2.33E-05
7440-41-7	Beryllium (HAP) ³	1.2 E-03	1.18 E-06	3.43E-05	1.61E-06
7440-43-9	Cadmium (HAP)	1.1 E-03	1.08 E-06	3.16E-05	1.39E-06
7440-47-3	Chromium (HAP)	1.4 E-03	1.37 E-06	4.02E-05	1.76E-06
7440-48-4	Cobalt (HAP)	8.4 E-03	8.34 E-06	2.41E-04	1.06E-05
7440-50-8	Copper	8.5 E-04	8.32 E-07	2.44E-05	1.07E-06
7439-96-5	Manganese (HAP)	2.8 E-04	2.73 E-07	1.09E-05	4.78E-06
7439-97-6	Mercury (HAP)	2.6 E-04	2.55 E-07	7.47E-06	3.27E-06
7439-98-7	Molybdenum	1.1 E-03	1.08 E-06	3.16E-05	1.39E-06
7440-01-0	Nickel (HAP)	2.1 E-03	2.06 E-06	6.03E-05	2.64E-06
7782-49-2	Selenium (HAP) ²	2.4 E-03	2.35 E-06	6.89E-05	3.02E-06
7440-62-2	Vanadium ⁴	2.3 E-03	2.25 E-06	1.18E-04	5.17E-06
7440-66-6	Zinc	2.9 E-03	2.84 E-06	8.33E-04	3.63E-05
Total HAP		1.14E-05	1.12 E-08	2.27E-07	1.43E-06

¹ Contribution of Air Pollutant Emissions Factors, AP-42 Section 1.4 Natural Gas Combustion (Rev. 3/98)

² EF in AP-42 is listed as less than (<) the value listed in "Emissions Factors" column.

³ EL value from IDAPA 58.01.01.583 or 584.

⁴ In IDAPA 58.01.01.583, the EL and AACC is for V (7440-42-3) expressed as V2O5 (1314-62-1). This Vanadium emissions rate is converted to V2O5 by: AP-42 emissions factor (lb/MMBtu) x heat input rate.

Total HAPs from All Point Sources

11.4 T/yr
Total TAPs from All Point Sources
11.2 T/yr

Source Information

Facility:	Merritt Brothers Lumber Co
Permit No.:	15-046121
Facility ID No.:	033-00039
Emission Unit:	Lumber facility

Year 2005

Year 2005																									
Wood Species	Emissions Factors in lb/1,000 board feet a, b, c, d	January		February		March		April		May		June		July		August		September		October		November		December	
		VOC (total VOC)	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	Throughput % for each species ^e 1,000 bdf ^f	
Alder	0.30	0%	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	
Douglas Fir	0.56	0%	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	
Hemlock	0.14	40%	333.2	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	
Lodgepole	1.23	60%	648.8	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	
Ponderosa	1.57	0%	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	
White fir	0.30	0%	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	
Other	1.30	0%	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	
Total monthly throughput ^g		10.83 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month	0.00 MMbdf/month		
VOC emissions of this month in T/month ^h		4.29 T/month	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Annual Emissions in T/yr, 12-month rolling ⁱ		VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	VOC emissions of this month + previous 11-month data	#DIV/0!		

^a Conversion factor for sawmilling VOC as Carbon to VOC as total VOC = 1% x Phaseol Me of 94.1 / 6 / Carbon Me of 12 = 88% x Terpene Me of 136.3 / 10 Carbon Me of 12 = 1,127. source: OAPCA - DRY KILN FACTORS (4/8/99)

^b Olymex Region Clean Air Agency (ORCAA), formerly the Olymex Air Pollution Control Authority (OAPCA). OAPCA - DRY KILN FACTORS (6/8/99). For more details about the original sources of the EF's, see a PDF file named ORCAA site factors.pdf.

^c Oregon State University (OSU), Small-scale Kiln Study, September 29, 2000.

^d Input throughput of each wood species in that month

^e % = Throughput of each wood species of the month (1,000 bdf) / total throughput of the month (MMbdf/1000). The "#DIV/0!" cell will have value(s) when the lumber throughput(s) of the month is added to the cell(s).

^f Weighted VOC EF = [EF1 x %]

^g VOC Throughput = weighted EF (lb/1,000 bdf) x total throughput of the month (1,000 bdf) / 1000 bdf

^h Annual Emissions in T/yr, 12-month rolling (T/yr) = [previous 11 months, monthly VOC emissions + this month VOC emissions]

Source Information

Facility:	Merritt Brother Lumber
Permit No.:	T2-040121
Facility ID No.:	055-00039
Emissions Unit:	Lumber facility

Wood Species	Emissions Factors in lb/1,000 board feet (lb/MBF)						
	PM	PM ₁₀	VOC as Carbon	VOC (total VOC) ^a	Phenol	Methanol	Formaldehyde
Alder							
ORCAA data (4/8/99) ^b	0.11	0.11	0.26	0.30	0.003		
Douglas Fir							
ORCAA data (4/8/99)	0.11	0.11	0.28	0.32	0.004		
OSU data (9/29/00) ^c			0.49	0.56		0.023	0.001
Hemlock							
ORCAA data (4/8/99)	0.04	0.04	0.12	0.14	0.002		
Lodgepole							
OSU data (9/29/00)			1.08	1.23		0.06	0.004
Ponderosa							
OSU data (9/29/00)			1.38	1.57		0.065	0.0029
White fir							
OSU data (9/29/00)			0.26	0.30		0.122	0.0028
Other							
DEQ data (1/8/97)				1.50			
for Worst Case	0.11	0.11		1.57	0.004	0.122	0.004

a. Conversion factor for converting VOC as Carbon to VOC as total VOC = 1% x Phenol Mw of 94.1/ 6 / Carbon Mw of 12 + 99% x Terpene Mw of 136.2/10/Carbon Mw of 12 = 1.137. source: OAPCA - DRY KILN FACTORS (4/8/99)

^b Olympic Region Clean Air Agency (ORCAA), formally the Olympic Air Pollution Control Authority (OAPCA). OAPCA - DRY KILN FACTORS (4/8/99). For more details about the original sources of the EFs, see a PDF file named ORCAA emis factors.pdf.

^c Oregon State University (OSU). Small-scale Kiln Study, September 29, 2000.

APPENDIX D

Response to Public Comments

Tier II Operating Permit and Permit to Construct No. T2-040121

Merritt Brothers Lumber Co., Athol

Facility ID No. 055-00039

**Response to Public Comments
Submitted During the Public Comment Period
for Merritt Brothers Lumber Co., Athol
Tier II Operating Permit and Permit to Construct No. T2-040121
Facility ID No. 055-00039**

As required by IDAPA 58.01.01.404.01.c of the Rules for the Control of Air Pollution in Idaho (Rules), the Idaho Department of Environmental Quality (DEQ) provided proposed Tier II Operating Permit and Permit to Construct No. T2-040121 for public notice and comment. Public comment packages, which included the application materials, the proposed permit, and the associated air quality statement of basis, were made available for public review at DEQ's Coeur d'Alene Regional Office, the Athol Public Library, and DEQ's state office in Boise. A copy of Tier II Operating Permit and Permit to Construct No. T2-040121 and the statement of basis were also posted on DEQ's Web site. The public comment period was provided from January 19 to February 18, 2005.

The only entity to provide comments on the proposed permit was Merritt Brothers Lumber Co. (MBL), which were provided on February 4, 2005. Below are DEQ's responses to those comments directly related to the air quality aspects of the proposed permit.

Comment No. 1

Permit Condition 4.3: The VOC emissions limit from the kilns should not be lowered from 97.5 T/yr to the estimated rate of 73.10 T/yr. The VOC emissions estimated provided in the permit application was based on a typical species mix of 40% grand fir and 60% lodgepole, which led to 73.10 T/yr. However, the calculation was meant to demonstrate how to estimate the VOC emissions. There is no environmental reason not to allow other species mixes as long as VOC emissions stay under the VOC limit of 97.5 T/yr.

DEQ Response to Comment No. 1

DEQ has increased the VOC permit limit for the facility's dry kilns from 73.10 T/yr to the requested limit of 97.5 T/yr. There is no environmental or regulatory consequence as a result and the increase allows the facility the flexibility to dry other lumber species. Compliance with the permit limit will be demonstrated by requiring that MBL monitor and record the lumber species dried, the corresponding emission factor, and the amount of the species dried.

Comment No. 2

The cyclones are process equipment, not control equipment. Permit Condition 5.4 in the proposed permit force MBL to start the cyclones whenever any work is done in the planer or finger jointer mills, even if the cyclones aren't needed.

The planer mill baghouse is control equipment for planer mill cyclone No.4 and should be required to operate whenever the planer mill cyclone is operating.

DEQ Response to Comment No. 2

The permit has been revised in response to Comment No. 2.

Revised Permit Condition 5.4 requires the following:

- 5.4.1 The baghouse that controls PM emissions from the planer mill cyclone No.4 shall be maintained in good working order and operate whenever the planer mill cyclone No.4 is operating.

- 5.4.2 The pressure drop across the planer mill baghouse inlet and the filter media shall be maintained within the specifications contained in the manufactures operating service manual. This manual shall remain onsite at all times and shall be made available to DEQ representatives upon request.
- 5.4.3 The permittee shall monitor and record the pressure drop across the planer mill baghouse inlet and the filter media once per week. These records shall remain onsite for the most recent five-year period and shall be made available to DEQ representatives upon request"